

VERIFICATIONS.

Indications.—The detailed comparison of the tri-daily indications for January, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 82.7 per cent. The percentages for the four elements are: Weather, 90.1; Direction of the Wind, 79.7; Temperature, 81.4; Barometer, 78.4 per cent. By geographical districts they are: for New England, 80.5; Middle States, 84.0; South Atlantic States, 86.2; Eastern Gulf States, 78.0; Western Gulf States, 82.2; Lower Lake region, 84.0; Upper Lake region, 86.5; Tennessee and the Ohio valley, 81.9; Upper Mississippi valley, 84.1; Lower Missouri valley, 78.2; Northern Pacific coast region, 84.0; Central Pacific coast region, 90.0; Southern Pacific coast region, 93.0. There were 264 omissions to predict out of 3,813 or 6.92 per cent. Of the 3,549 predictions that have been made, 144, or 4.06 per cent. are considered to have entirely failed; 140, or 3.94 per cent. were one-fourth verified; 523, or 14.74 per cent. were one-half verified; 416, or 11.72 per cent. were three-fourths verified; 2,326, or 65.54 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

Cautionary Signals—147 Cautionary Signals were displayed during the month, of which 124, or 84.3 per cent., were fully justified by winds of 25 miles per hour or over at, or within a radius of 100 miles of the station. 37 Off-shore Signals were displayed, of which 31 or 83.8 per cent, were fully justified, 35 or 94.6 per cent, justified as to direction and 32 or 86.4 per cent were justified as to velocity. Fifteen of the Off-Shore were changed from Cautionary. 184 Signals of both kinds were displayed, of which 155 or 84.2 per cent, were fully justified. The above does not include signals ordered at display stations on the New England coast, where the velocity is only estimated. Eleven signals were ordered late.

NAVIGATION.

Stage of Water in Rivers.—In the table on the right-hand side of chart No. III are given the highest and lowest stages of water, as observed on the Signal Service river-gauges, during the month of January, 1881. The Arkansas, and the Mississippi at St. Louis, experienced but little change during the month. There was a marked rise in the Red, and that portion of the Mississippi from Cairo to Vicksburg, from 25th to 31st, reaching the highest water on the latter date at all stations except Cairo, where it occurred on the 28th. In the Ohio, Cumberland, Tennessee and Savannah rivers, the highest stage was reached between the 20th and 25th, and as early as the 8th, in the Monongahela, at Morgantown. The Willamette, at Portland, Or., rose very rapidly on the 14th and 15th, flooding lower portion of city and a large section of the surrounding country. The Sacramento, at Sacramento, rose suddenly on the 29th, and by 11 a. m. of the 31st, reached 26 feet above low water mark; 0.5 inch higher than ever before recorded. At Red Bluff, the river rose rapidly on the 14th and 29th, but reached its highest stage on the 31st, twenty-four feet above low water mark.

Ice in Rivers and Harbors.—The following items show the condition of the navigable waters throughout the United States, during the month of January, 1881, in respect to the formation of ice. The Missouri and that portion of the Mississippi River from Keokuk northward have remained frozen over during the month. At all stations on the lakes ice has accumulated to a considerable thickness and extends to long distances from shore, prohibiting all navigation. From other sources the following notes are given in detail: *Columbia River.*—Portland, 22nd, navigation closed between city and Cascade because of ice, but open again on the 31st; 24th, considerable floating ice in lower portion of river; 25th, large quantities of ice gorged at Willow Bar. *Umatilla River.*—Umatilla, navigation closed during month because of floating ice. *Snake River.*—Lewiston, Idaho, 1st, full of floating ice. *Clear Water River.*—Lewiston, Idaho, 1st, full of floating ice; 17th, considerable floating ice. *Mississippi River.*—St. Paul, 31st, ice 30 inches thick. Dubuque, 31st, ice 18 to 32 inches. Keokuk, 17th, teams crossing on ice, first time this season. Clinton, Iowa, 31st, ice 24 to 30 inches. St. Louis, 1st, river south of bridge kept clear of ice by tugs; north of bridge ice 14 inches thick. Cairo, floating ice, 24th to 26th; clear of ice, 29th. Memphis, floating ice, 1st to 31st; on the 10th so heavy as to practically close navigation; 14th, steamer loaded with cotton and valued at \$139,000, was sunk at wharf; supposed to be caused by floating ice. *Ohio River.*—Cairo, 15th, ice gorge broke; 19th, navigation resumed, boat left for Cincinnati. Louisville, 9th, ice breaking up; 10th to 15th, floating ice, heaviest for many years; 20th, breaking away from banks and large quantities passing down river; 21st, full of ice from breaking of gorge at Madison and from the Licking and Kentucky rivers; 22nd, two steamers attached to docks "stove in" by floating ice; 23rd, canal open and boat came from Portland; 28th to 31st, full of floating ice. Cincinnati, 8th, ice broken up, carrying away many coal barges; causing a loss estimated at \$60,000; 13th, navigation resumed; 14th to 20th, small quantities of floating ice; 21st, filled with ice by breaking up of gorges from above. Vevay, Ind., 3rd, frozen over, people crossing in large numbers; 8th, ice soft and unsafe for crossing; 11th, breaking up and running out; 12th, full of floating ice; 17th, first steamer since breaking up of ice passed down the river; 20th, very heavy floating ice, difficult for boats to pass; 23rd, boats running quite regularly. Portsmouth, 1st, teams crossing on ice; 7th, broke up with considerable destruction to shipping; 8th to 20th, heavy floating ice